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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,625	10/22/2003	Sang Min Jang	8733.862.00-US	4806
30827	7590	10/14/2005	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP			QI, ZHI QIANG	
1900 K STREET, NW			ART UNIT	
WASHINGTON, DC 20006			PAPER NUMBER	
			2871	
DATE MAILED: 10/14/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/689,625

Applicant(s)

JANG ET AL.

Examiner

Mike Qi

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 14-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-11 is/are rejected.
- 7) ☒ Claim(s) 3,4,12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 5 is objected to because of the following informalities:

Regarding claim 5, recitation “. . . the first and second organic insulating layer photosensitive resin.” Should be changed into - - the first and second organic insulating layers are photosensitive resin. - -

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 6-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,407,784 B1 (Kanou et al) in view of US 6,784,957 B2 (Kanou et al as Kanou' 957).

Regarding claim 1, Kanou discloses (col.8, line 5 – col.9, line 26; Fig.3) that a method of forming a reflective electrode in a liquid crystal display comprising:

- depositing a first organic insulating film (28) on a substrate (35A) (the material of the insulating film is organic insulating film, see col.13, lines 57-65);
- forming a first peak and depression (raised and recessed) layer (25) in the first organic insulating layer (28);

- depositing a second organic insulating film (30) on the first peak and depression (raised and recessed) layer (25) (the material of the insulating film is organic insulating film, see col.13, lines 57-65);
- forming second peak and depression (raised and recessed) layer (25A) in the second organic insulating film (30);
- forming a reflective electrode (74) on the first and second peak and depression (raised and recessed) layer (25, 25A).

Kanou does not explicitly disclose that using first mask to form the first peak and depression layer and using second mask to form the second peak and depression layer.

Kanou' 957 discloses (col.4, line 64 – col.5, line 13) that using a mask pattern to form the convex/concave (peak and depression) in the insulating film that enables to accurately control the shape of the convex/concave pattern and to form a desired convex/concave pattern with a high reproducibility. Such that forming different pattern should use different mask pattern, and using first mask to form first peak and depression layer and using second mask to form second peak and depression layer.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the reflective plate fabricating method of Kanou with the teachings of using mask to form the peak and depression layers as taught by Kanou' 957, since the skilled in the art would be motivated for achieving accurately control the shape of the peak and depression pattern so as to form a desired peak and depression pattern with a high reproducibility (see col.4, line 64 – col.5, line 13).

Regarding claims 6-9, Kanou teaches the invention set forth above except for the first mask and the second mask having light transmission portion and light reflecting portion, and the mask is transfective mask.

Kanou'957 discloses (col.22, line 51 – col.23, line 15; Fig.34) that using mask (282) having convex/concave pattern (281) and contact pattern (280), and the light passing is controlled; and using such mask having light passing portion and light not passing portion (would be reflecting portion) (transfective mask), so that would be possible to simultaneously obtain different etching amounts, so as to simultaneously control the exposure amount to obtain the desired convex/concave pattern (peak and depression pattern).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the reflective plate fabricating method of Kanou with the teachings of using transfective mask having light transmission portion and light reflective portion as taught by Kanou'957, since the skilled in the art would be motivated for achieving simultaneously control the light passing amount so as to obtain the desired peak and depression pattern (see col.22, line 51 – col.23).

Regarding claim 11, Kanou discloses (col.8, line 5 – col.9, line 26; Fig.3) that the plurality of second peak and depression (raised and recessed) layer (25A) overlapped with the first peak and depression (raised and recessed) layer (25), and also overlapped with the peaks (raised portion).

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4. Claims 2, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanou and Kanou'957 as applied to claims 1, 6-9 and 11 above, and further in view of Applicant admitted prior art (AAPA).

Regarding claims 2 and 5, Kanou and Kanou'957 teach the invention set forth above except for the first and second organic insulating layers are photosensitive resin, and the first and second peak and depression layers are softened by a curing bake process to form a plurality of peak patterns.

AAPA discloses (paragraphs 0059, 0062) that a conventional reflecting surface with peak and depression structure as shown in Figs.10A to 10E in which using photosensitive resin film to form the peak and depression structure through the curing bake process and the plurality of peak patterns of the photosensitive resin film are softened to form curved patterns of peaks and depressions.

Because the curing bake process generates heat, and under the thermal treatment the photosensitive resin are softened that is the property of the photosensitive resin, and that is conventional for obtaining the curved patterns of peaks and depressions.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the reflective plate fabricating method of Kanou with the teachings of using photoresistive resin to form the peak and depression structure as taught by AAPA, since the skilled in the art would be motivated for using heat easily to form the peak and depression structure as the photoresistive resin being softened under thermal treatment (see paragraphs 0059, 0062).

Regarding claim 10, Kanou and Kanou'957 teach the invention set forth above except for the first and second peak and depression layers have a plurality of peaks that are randomly arranged.

AAPA discloses (paragraphs 0064) that a conventional reflecting surface with peak and depression structure as shown in Figs.10A to 10E in which the peak and depression pattern is formed randomly so as to avoid the interference of the light generated between peaks and depressions.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the reflective plate fabricating method of Kanou with the teachings of randomly arranging the peaks as taught by AAPA, since the skilled in the art would be motivated for avoiding the interference of the light generated between peaks and depressions (see paragraphs 0064).

Allowable Subject Matter

5. Claims 3-4 and 12-13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record neither discloses nor teaches that a method of fabricating a reflective plate used in a liquid crystal display comprising various steps as claimed, more specifically, as the following;

forming first and second peak and depression layers having plurality of peaks in which the highest point and the center pints of each of the peaks in the first peak and

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depression layer are different from the highest point and the center points of each of the peaks in the second peak and depression layer [claims 3-4, as shown in Fig.15H];

forming first and second peak and depression layers having plurality of peaks in which the peaks in the second peak and depression layer overlapped with portions of the peaks of the first peak and depression layer with a height less than one half height of the peaks of the first peak and depression layer; and the final peak shape having a ratio of a height to a radius of 1:10 [claims 13-14].

The closest references such as US 6,407,784 B1 (Kanou et al) discloses that using two insulating layers to form peak and depression pattern and forming reflective electrode on the peak and depression pattern layers, but the prior art of record do not disclose using the peaks in the two peak and depression layers having different highest point and different center point as claimed in claims 3-4, and the specific overlapping portion of the two layers as claimed in claim 12, and forming a final peak shape having height to radius ratio of 1:10 as claimed in claim 13.

Response to Arguments

6. Applicant's arguments filed on Sep.28, 2005 have been fully considered but they are not persuasive.

1) The reference Kanou discloses (col.8, lines 34 – 43) that the first insulating film (28) (organic) is formed with first raised and recessed (peak and depression) portions (25) on a substrate (35A), the second insulating film (30) (organic) on the first raised and recessed (peak and depression) is formed with second raised and recessed

(peak and depression) portions (25A), and reflective plate (74) on the first and second raised and recessed (peak and depression) portions.

2) The reference Kanou'957 is relied on using mask pattern to form the convex/concave (peak and depression) in the insulating film that enables to accurately control the shape of the convex/concave pattern and to form a desired convex/concave pattern with a high reproducibility (see col.4, line 64 – col.5, line 13).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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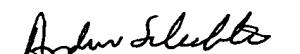
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Qi
October 7, 2005


ANDREW SCHECHTER
PRIMARY EXAMINER